(b) what are the reasons for the delay in establishing microwave linkage to Ahmedabad; and

(c) by when it is likely to be done?

THE DEPUTY MINISTER IN THE MINISTRY OF INFORMATION AND BROADCASTING (KUMARI GIRIJA VYAS); (a) to (c). A statement is laid on the table of the House.

Statement

(a) There is, at present no proposal for establishment of a dedicated TV bearer microwave circuit between Doordarshan Kendra, Ahmedabad and other transmitters operating in the State. However, TV transmitters in Gujarat including the one at Rajkot are envisaged to be linked to Doordarshan Kendra, Ahmedabad for relay of regional service *via* satellite.

(b) and (c) The satellite-derived regional TV service was initially planned to be introduced in the State on availability of space segment during INSAT-II time frame i.e. between 1993 —95. However, with a view to catering to Gujarat's requirement as expeditiously as possible, arrangements have been made to introduce this service in an earlier time-frame. As per present indications, the Regional TV service is envisaged to be introduced in the State during, 1992.

*97. *[Transferred to* 26 *July,* 1991].

Schemes to study cosmology and space exploration

*98. SHRI S. K. T. RAMACHANDRAN: Will the PRIME MINISTER be pleased to state:

(a) what are the schemes under implementation to study Cosmology and Space Exploration;

(b) whether there is any agency in India to interact with other countries which are engaged in advanced Studies of Cosmology and Space exploration; if so, the details thereof;

(c) the number of Indian Satellites now in the Space and what are the missions; and

(d) the amount spent on space studies and space exploration during the year 1990-91?

THE MINISTER OF STATE IN T1HE MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS (SMT. MARGARET ALVA): (a) to (d) A Statement is laid on the Table of the Rajya Sabha.

Statement

(a) There are a number of schemes under implementation to study cosmology and space exploration. These include:

—Setting up and operationalisation of 2.34m optical telescope at Kavalur.

—Establishment of 1-m infrared/ optical telescope at Mt. Abu.

—Augmentation of Synthesis Radio Telescope at Uthagamandalam (Tamilnadu) for large field of view observations.

—A Giant Metre-wave Radio Telescope (GMRT) is being set up about 80km north of Pune as a national facility.

—Conduct of a gamma-ray burst experiment through Stretched Rohini Satellite Series (SROSS).

—A joint satellite experiment called Indo-Soviet satellite gamma ray astronomy programme (GRISP) as a part of Indo-Soviet cooperation.

(b) Yes, Sir. Department of Space is coordinating international collaboration in the field of space exploration & cosmology. Apart from the Physical Research Laboratory (PRL), Ahmedabad (major space science

laboratory under the Department of Space) and also various Centres/ Unite of the Indian Space Research Organisation (ISRO), there are other institutions/laboratories such as the Tata Institute of Fundamental Research (TIFR), Bombay; Indian Institute of Astrophysics (HA), Bangalore; etc. which have interacted with scientific groups of different countries involved in research in cosmology and pace exploration.

(c) Since 1975, eleven Indian sate-Ktes have been put into space, out of which the following are presently providing operational services:

INSAT—IB and ID: Multipurpose National Satellite System for domestic telecommunications, meteorology and nation wide direct TV broadcasting to rural communities, and radio and TV programme distribution for re-broadcasting/ networking.

IRS—1A: First in the series of satellite to form the space segment of the country's National Natural Resources Management System (NNRMS). Imageries obtained from IRS-1A are used in applications such as mapping of forestry, and wasteland, crop inventory, ground water targetting, integrated drought management regional geological mapping, land use patterns and various other resources survey and management areas.

The missions of satellite include:

—Satellite TV/Radio broadcasting, telecommunications, meteorological data collection on cloud cover, cyclones etc., (Indian National Satellite (INSAT) series).

—Remote sensing of earth resources by providing high resolution visible/infrared imageries over India (Indian Remote Sensing Satellite (IRS) series).

—Studies on upper atmospheric and ionospheric phenomena, solar physics and galactic X-ray and gamma-ray astronomy [Stetched Rohini Satellite Series (SROSS)]

—In order to realise operational satellite services in communications and earth resources survey (e.g. INSAT, IRS etc.) a number of experimental satellites have been launched to develop and prove necessary technologies (Aryabhata, Bhaskara-I & II, APPLE, ROHINI Series etc.).

(d) The amount spent on Space Studies and Space exploration in the year 1990-91 is Rs. 9.10 crores.

Amount of central assistance to Maharashtra

*99. DR. BAPU KALDATE: Will the Minister of PLANNING AND PROGRAMME IMPLEMENTATION be pleased to state:

(a) what is the amount of the Central assistance provided to the Government of Maharashtra during the last three years for the welfare and development schemes in the State;

(b) what are the welfare and development schemes for which Central assistance has been provided;

(c) whether Government have monitored the progress with regard to the implementation of the various schemes; and

(d) if so, the details thereof and Government's reaction thereto?

THE MINISTER OF STATE (INDEPENDENT CHARGE) OF THE MINISTRY OF PLANNING AND PROGRAMME IMPLEMENTATION (SHRI H. R. BHARDWAJ): (a) to (d) A statement is laid on the Table of the House.

Statement

(a) to (d) Central assistance to States is provided in the form of block loans and grants, and not on